

Ferromagnetic E core with a matching ferromagnetic cap

FIG. 1
(PRIOR ART)

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TOROID TRANSFORMER

Top View

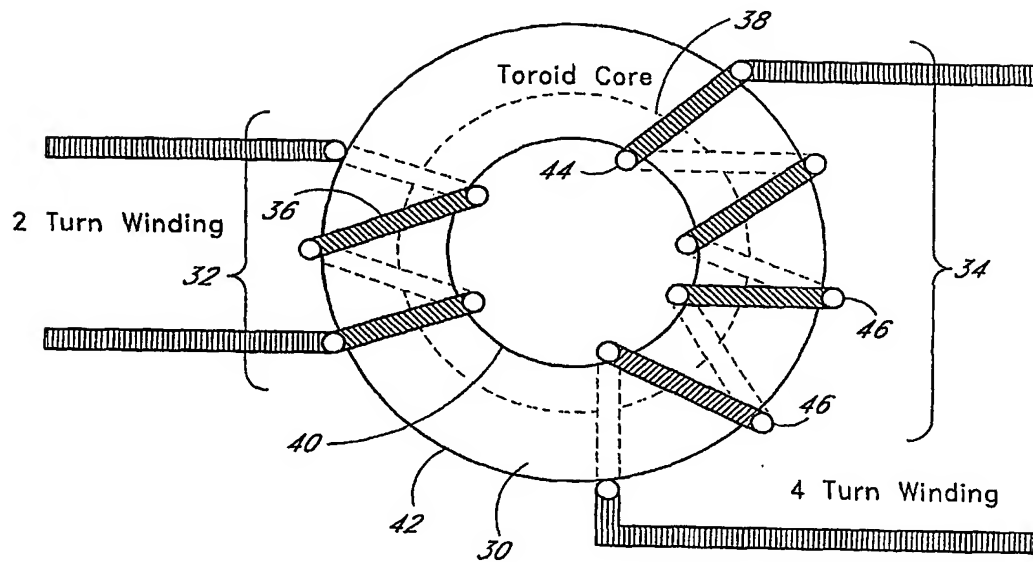


FIG. 2A

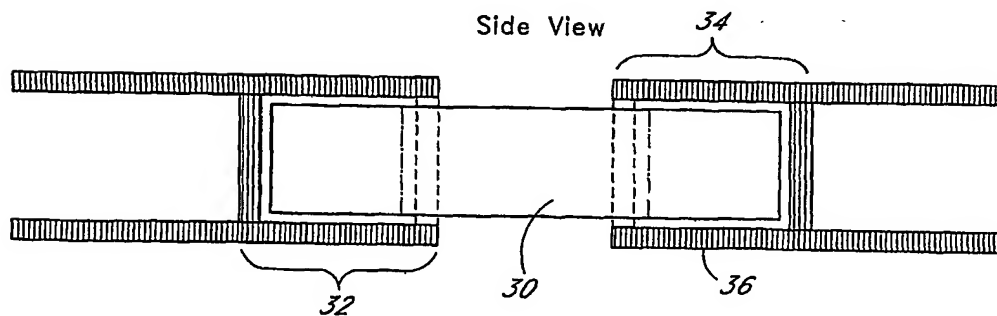


FIG. 2B

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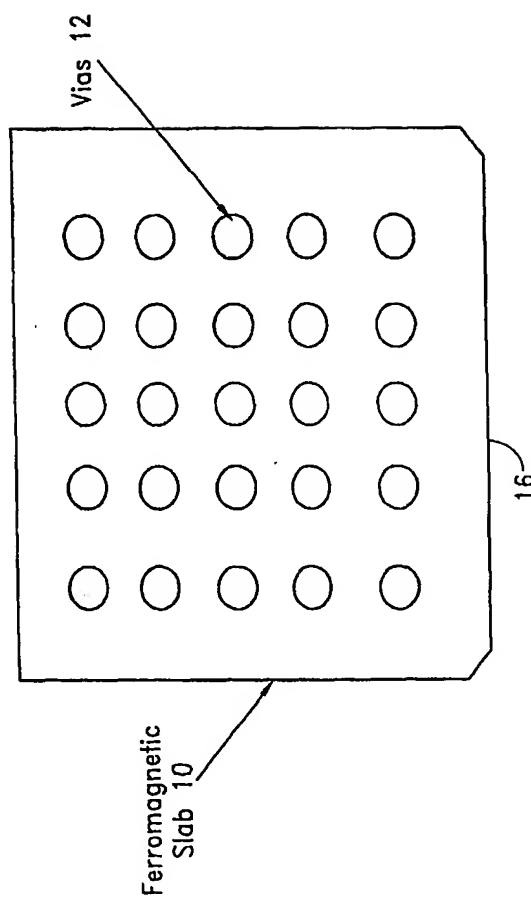


FIG. 3

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VIRTUAL TOROID TRANSFORMER

Top View

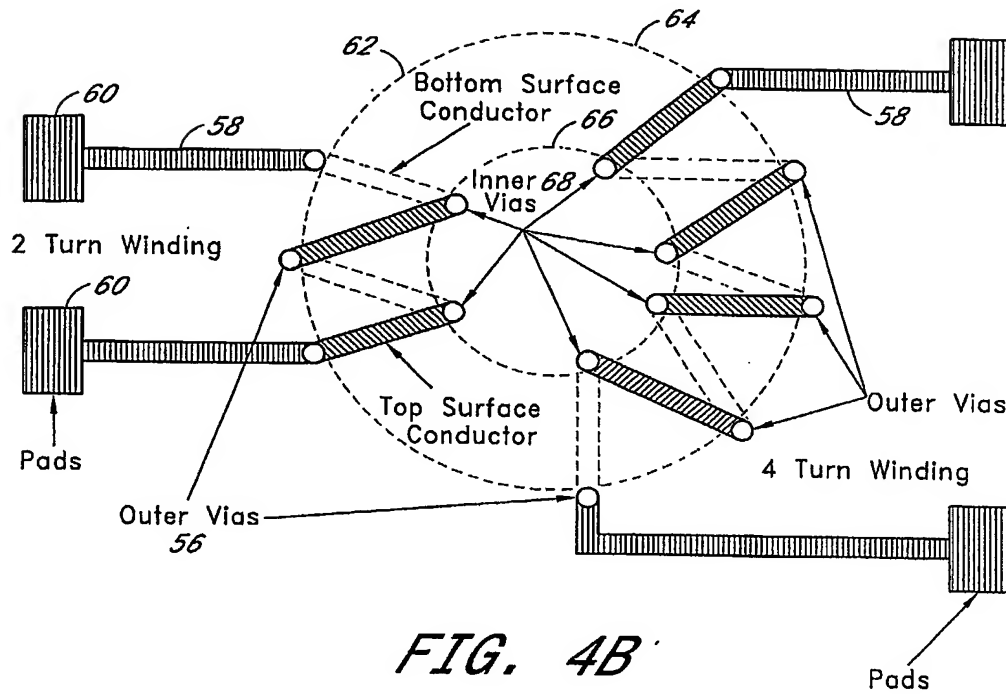


FIG. 4B

Side View

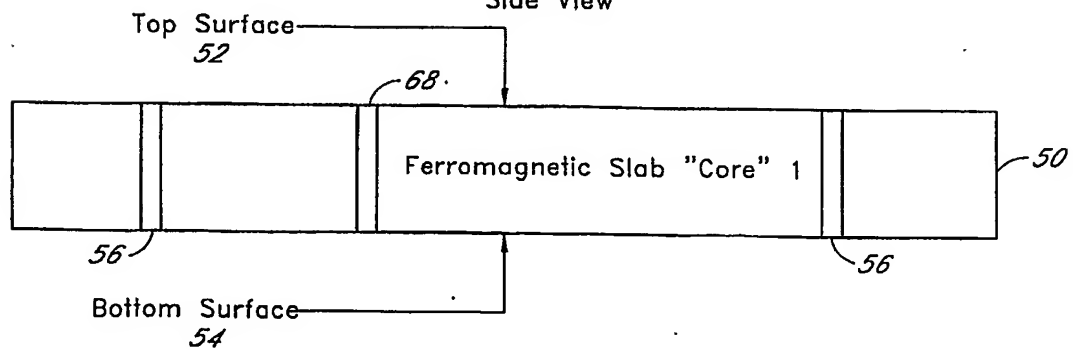


FIG. 4A

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VIRTUAL TOROID & RECTANGULAR
TRANSFORMER SAME SLAB
Top View

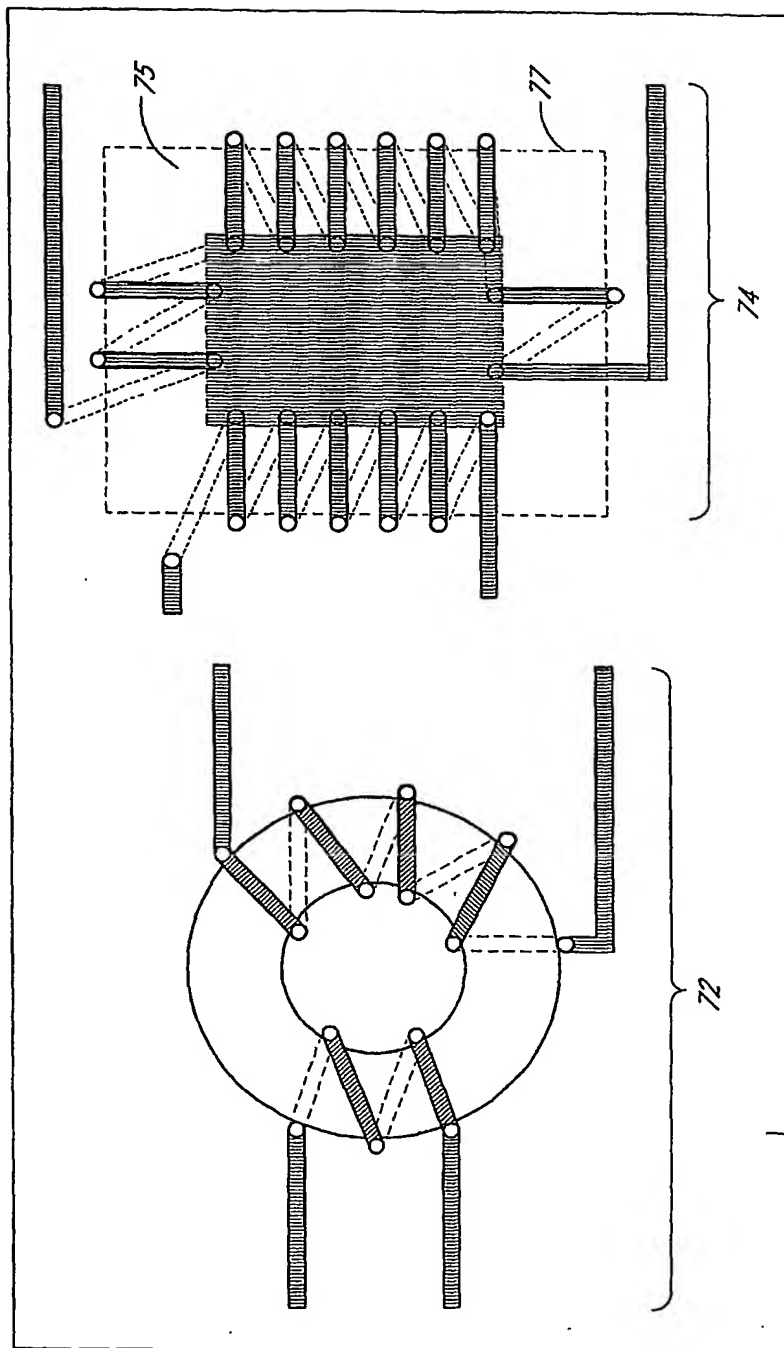
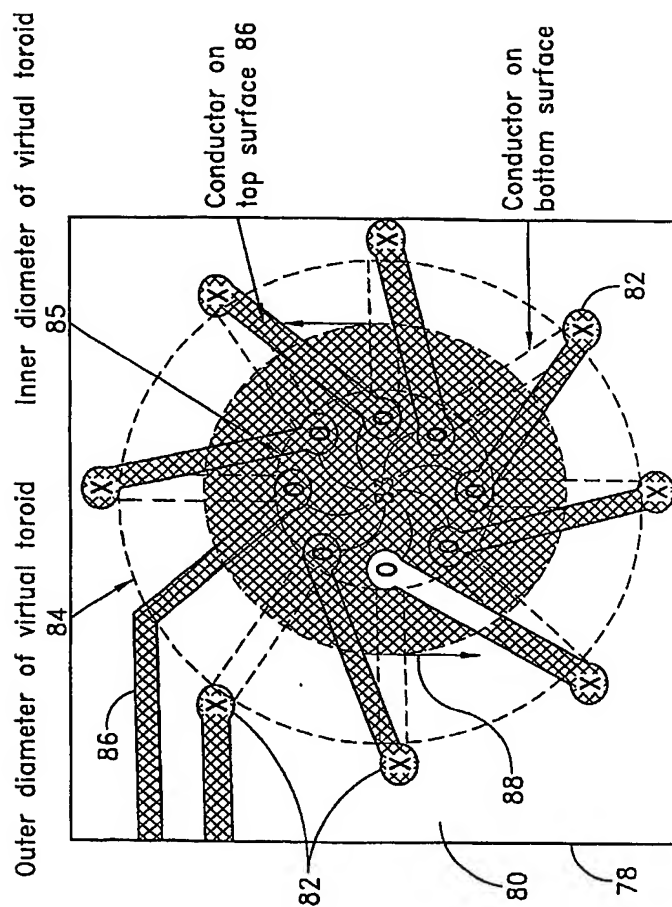


FIG. 5

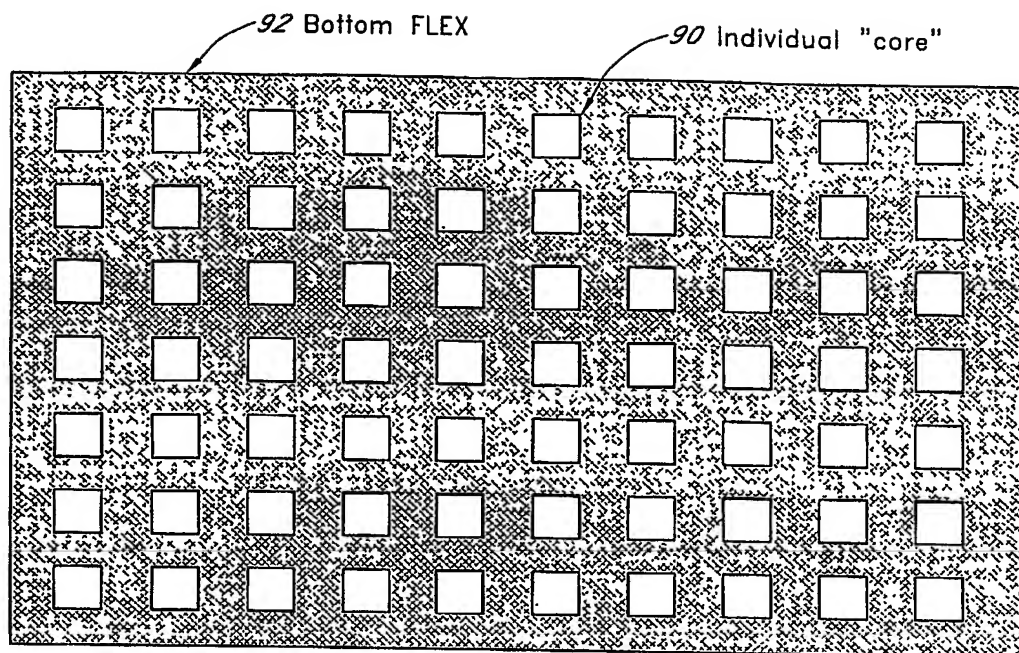
A virtual toroid core energized by an 8 turn winding



(X) Via with current into hole (O) Via with current out of hole

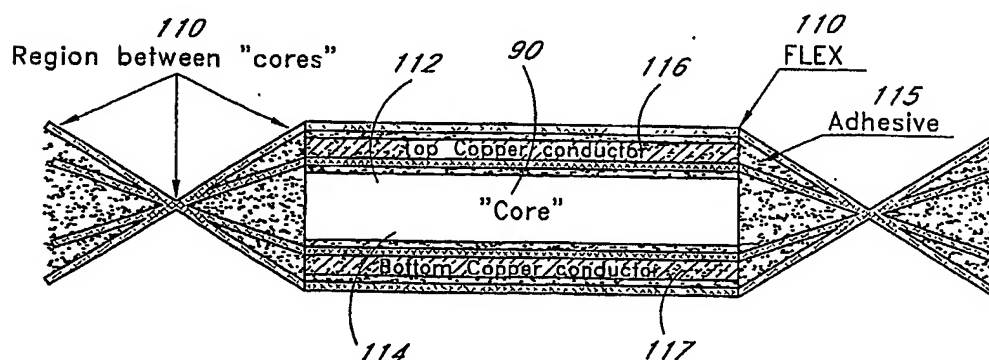
FIG. 6

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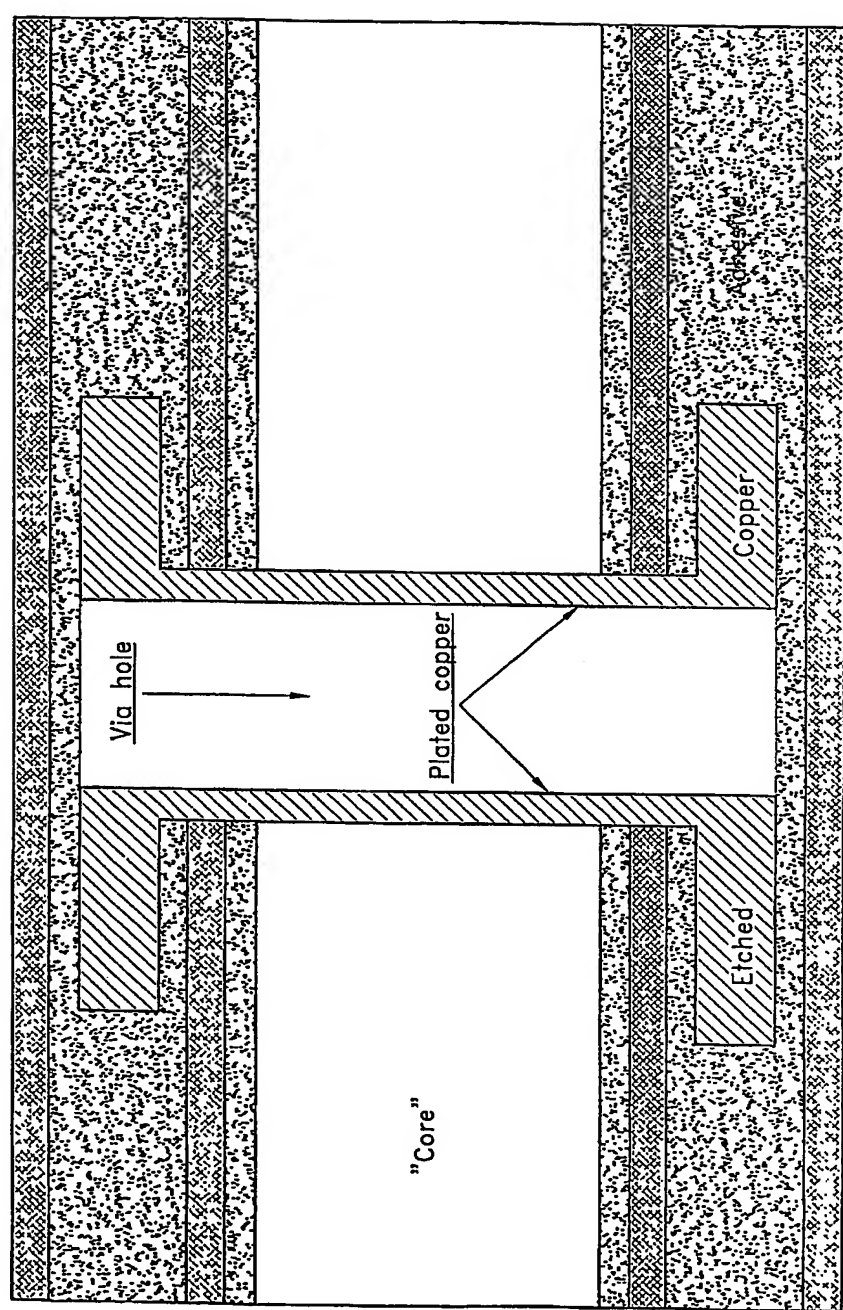
Array of 70 cores laminated onto a large panel of FLEX
(top FLEX removed to show the individual cores)

FIG. 7



Side view showing top & bottom FLEX laminated
to "core" in a panel of 70 "cores"

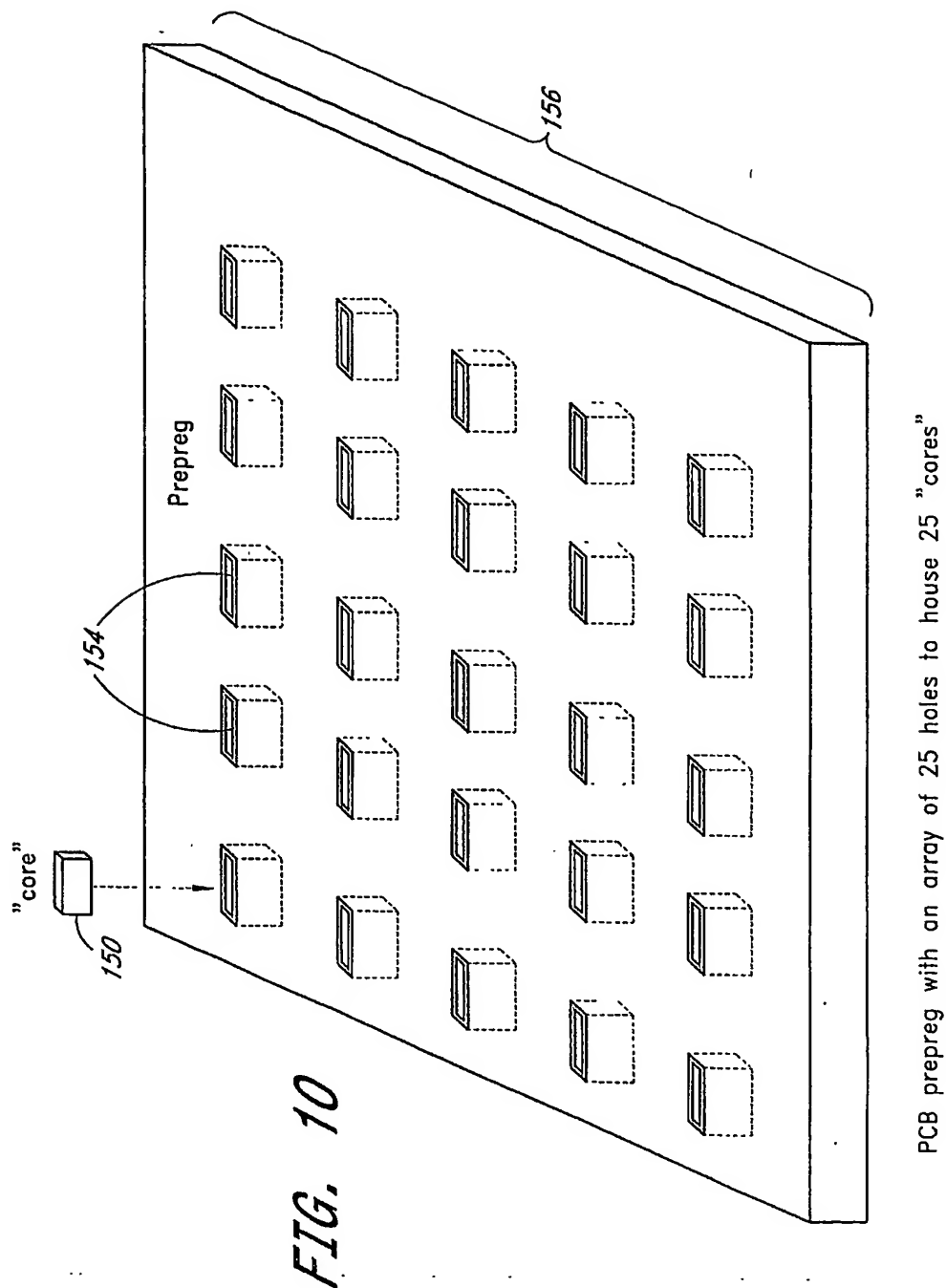
FIG. 8
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Cross section of via hole

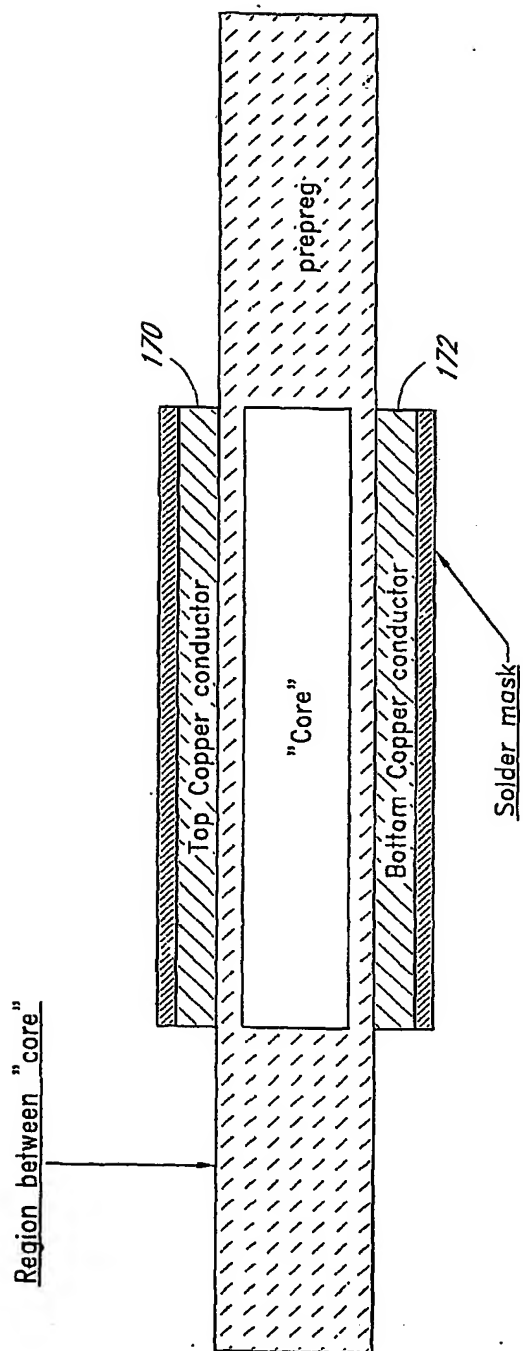
FIG. 9

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Side view showing top & bottom PCB laminated to "core" in a panel of 25 "cores"

FIG. 11

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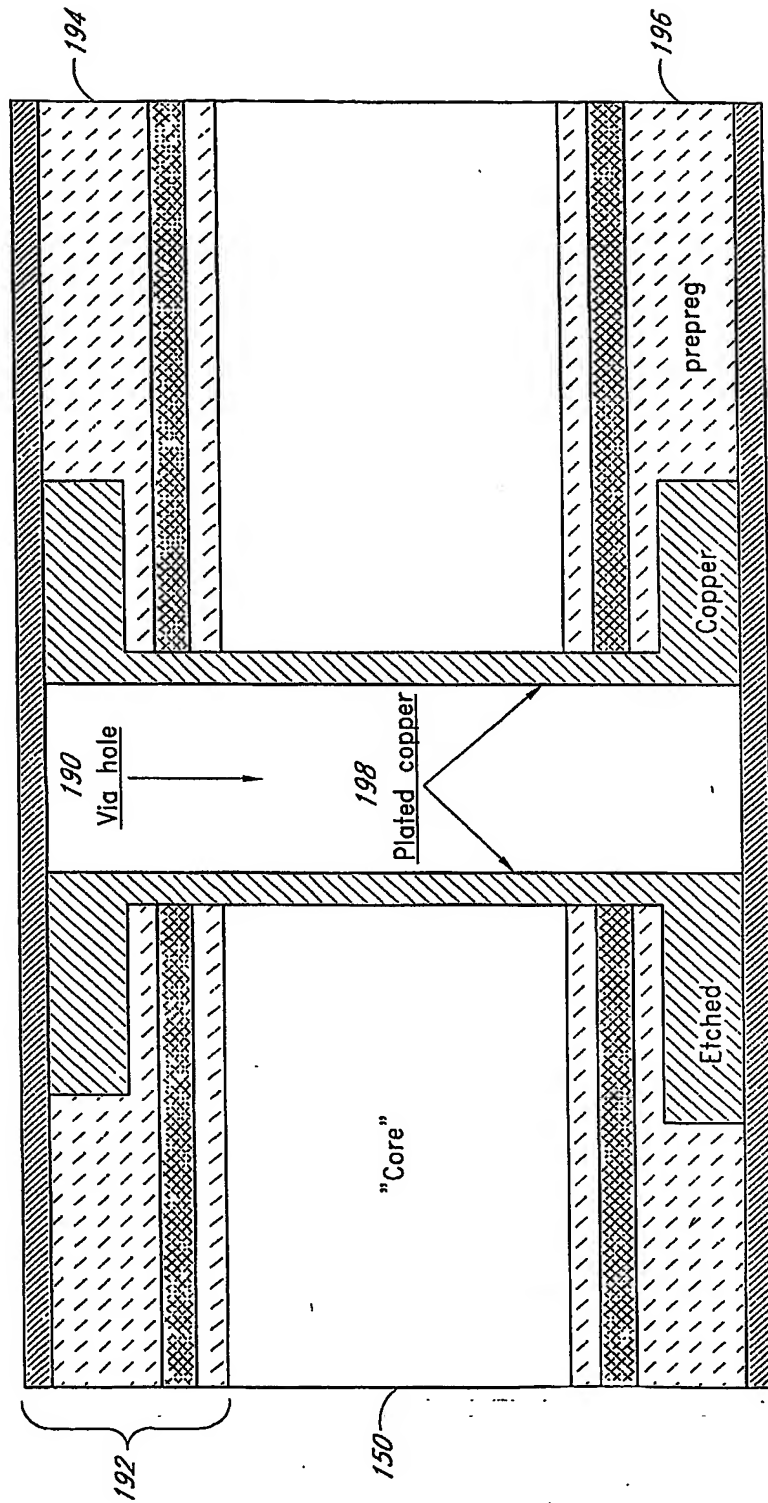


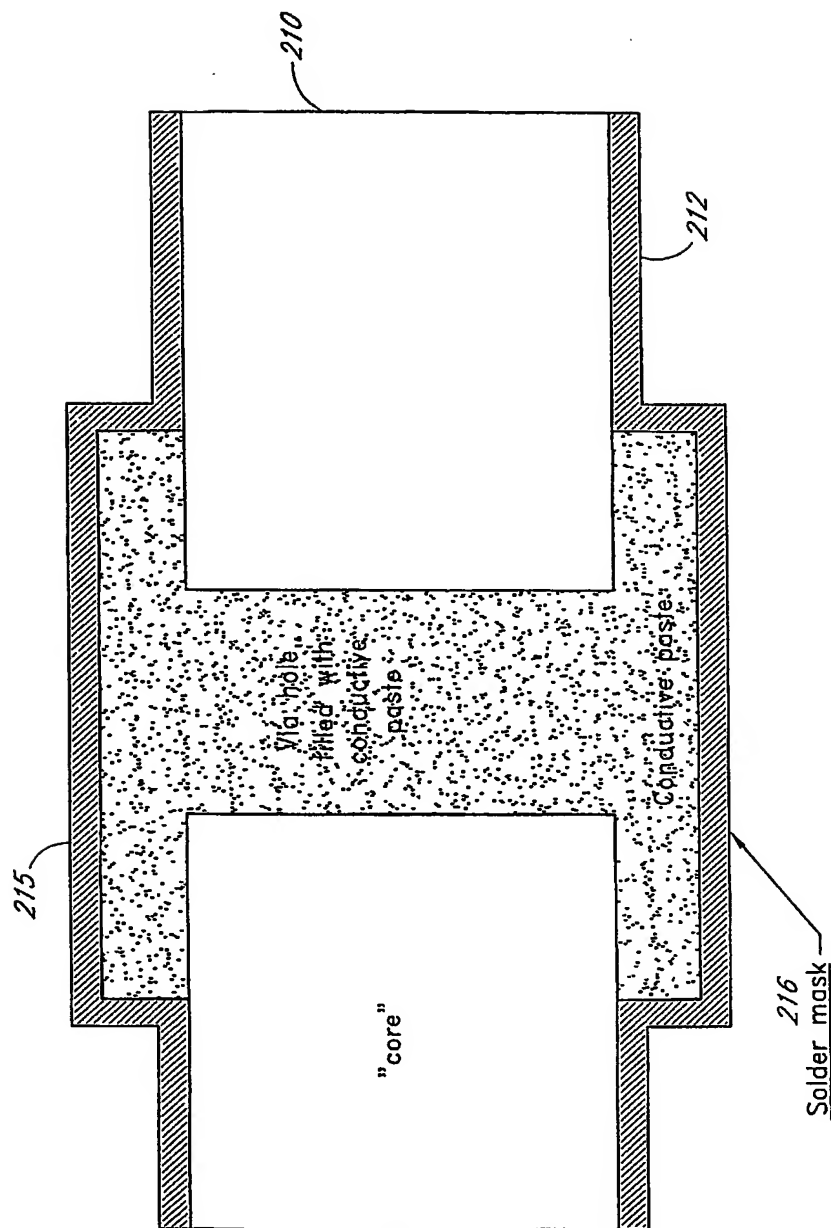
FIG. 12

Cross section of via hole

Solder mask

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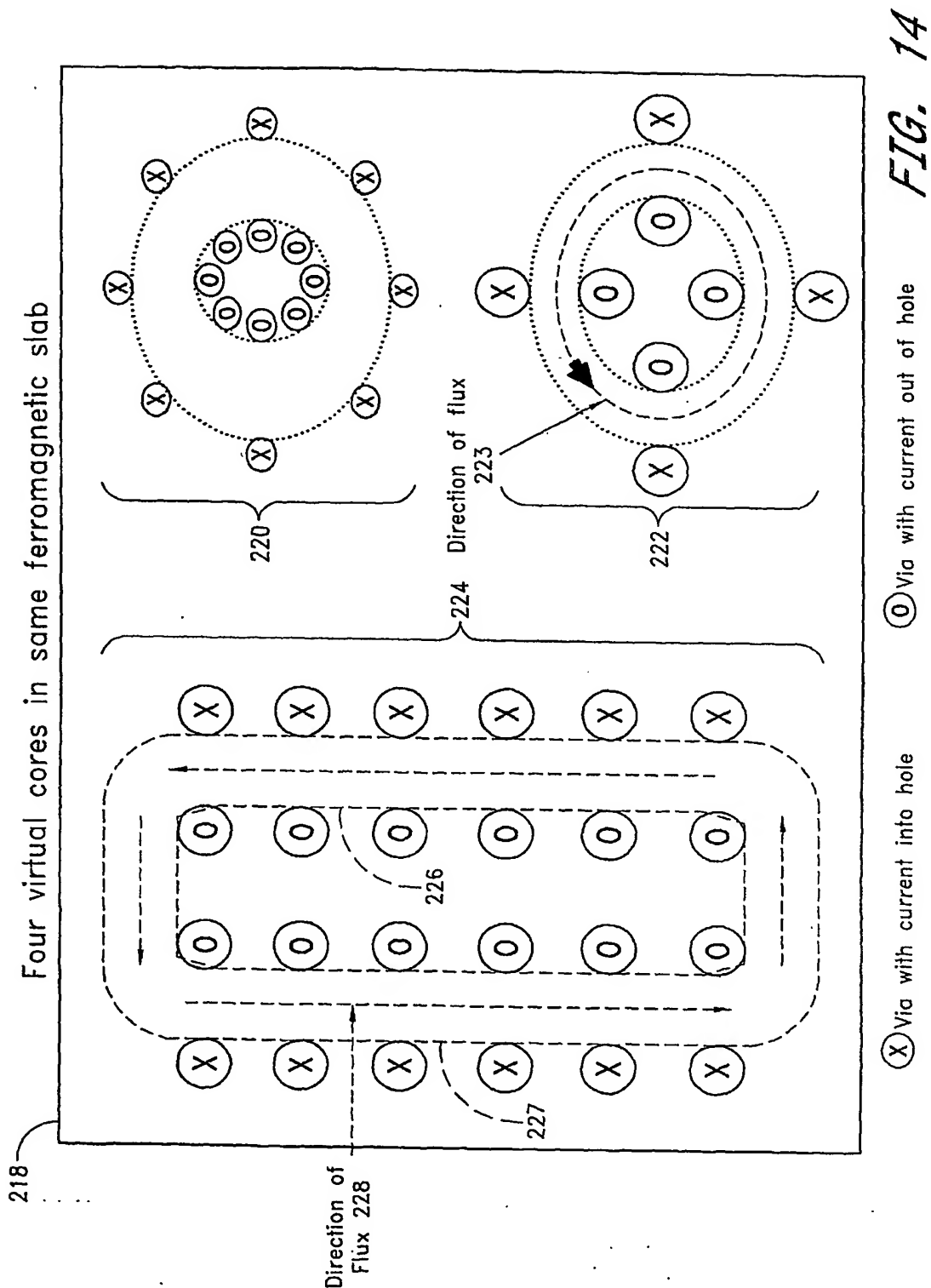
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Cross section of via hole of "core" with screened conductive paste

FIG. 13

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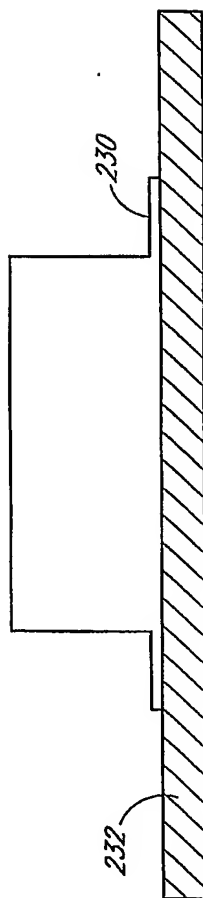


FIG. 15

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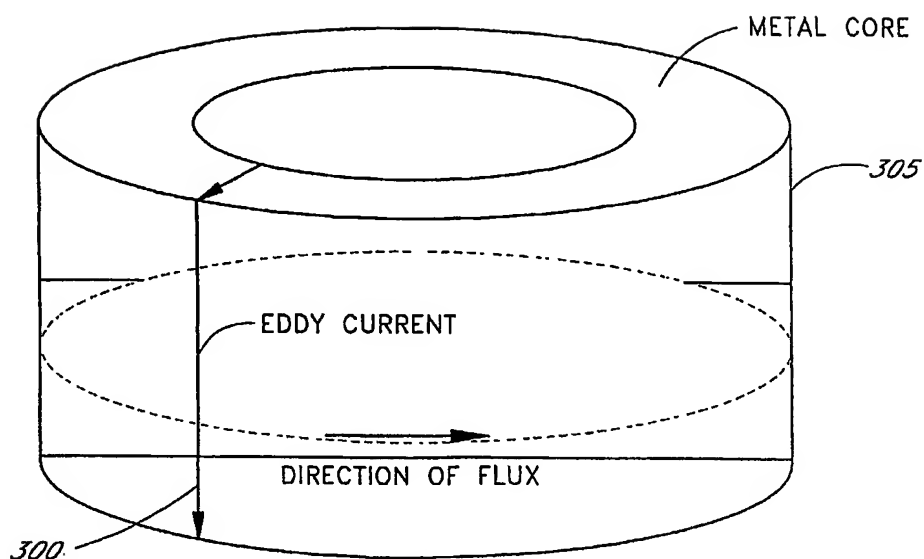


FIG. 16

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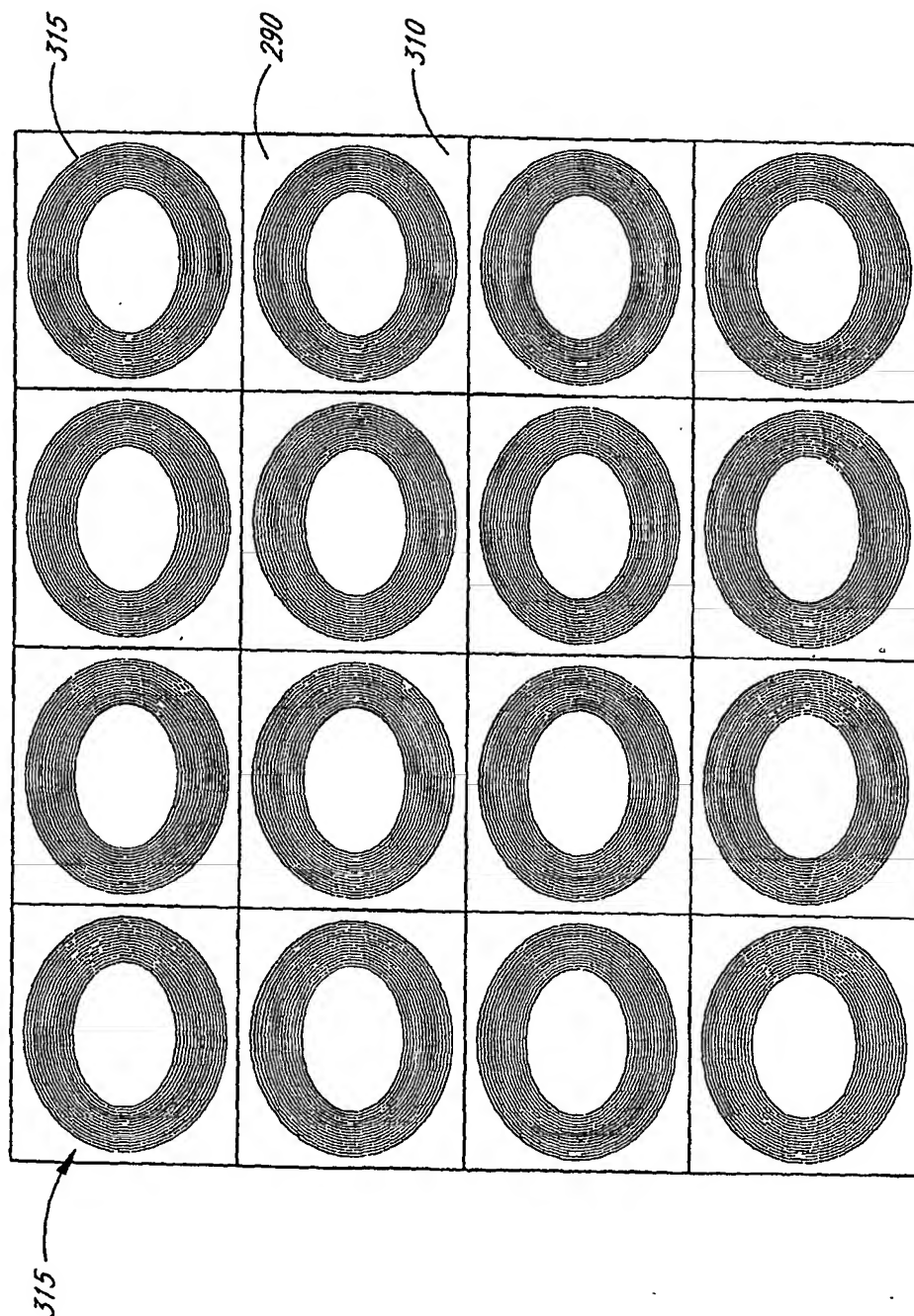


FIG. 17

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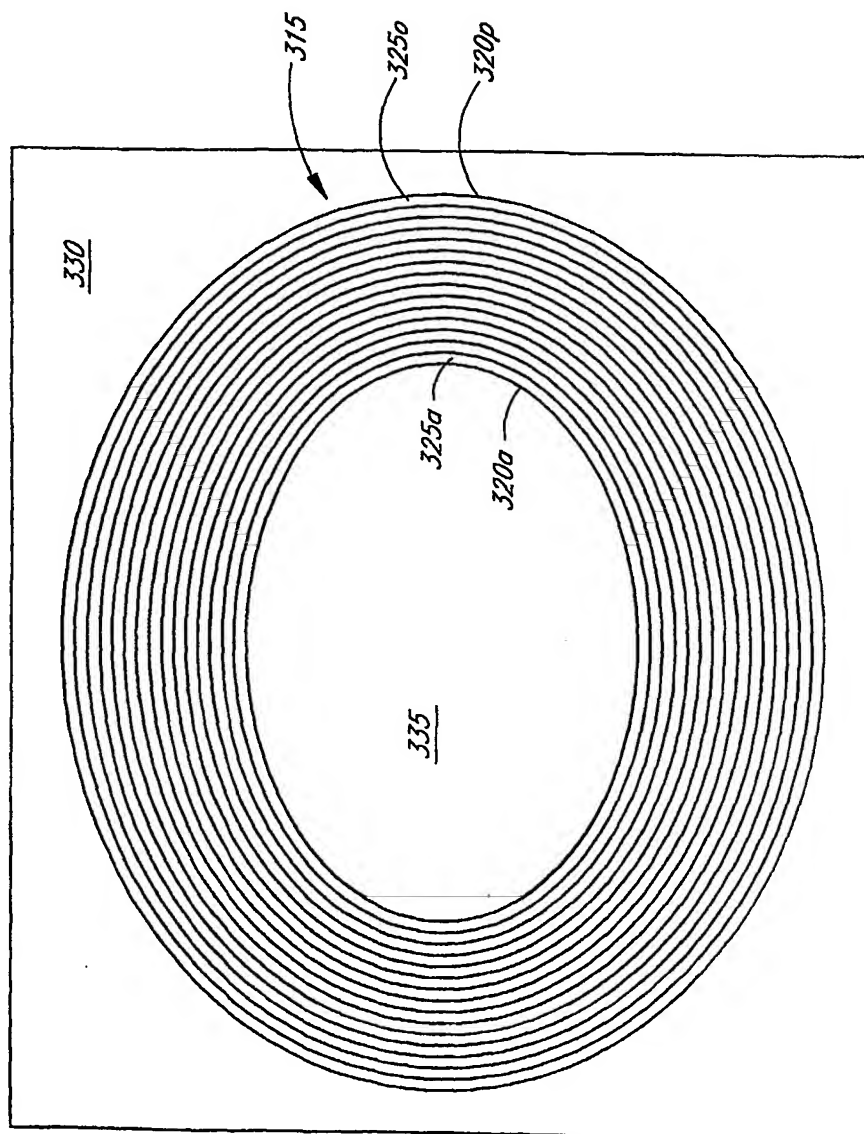


FIG. 18

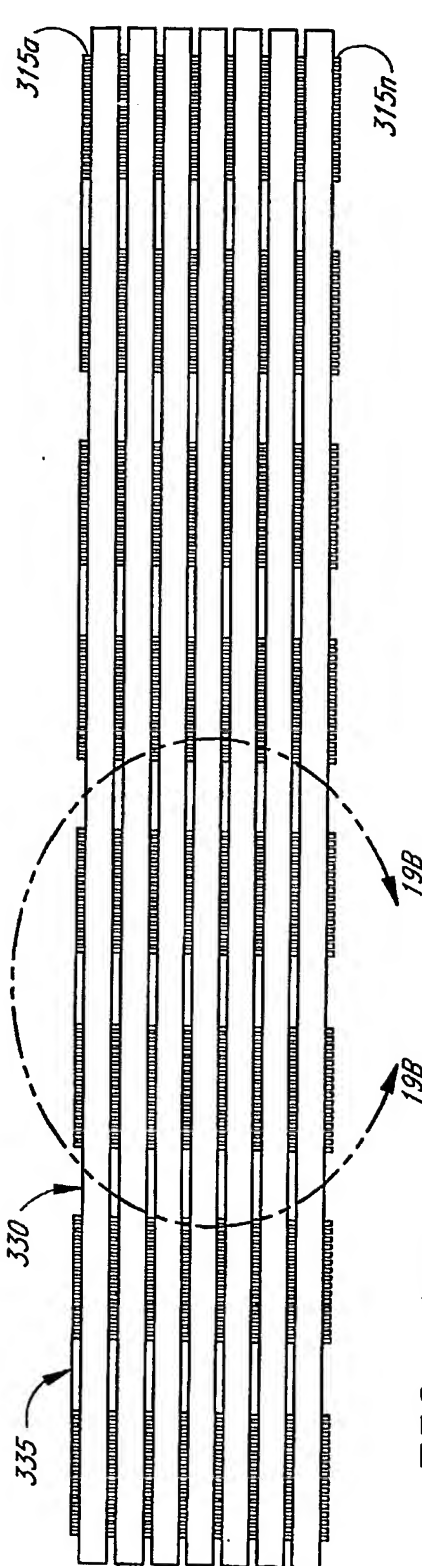


FIG. 19A

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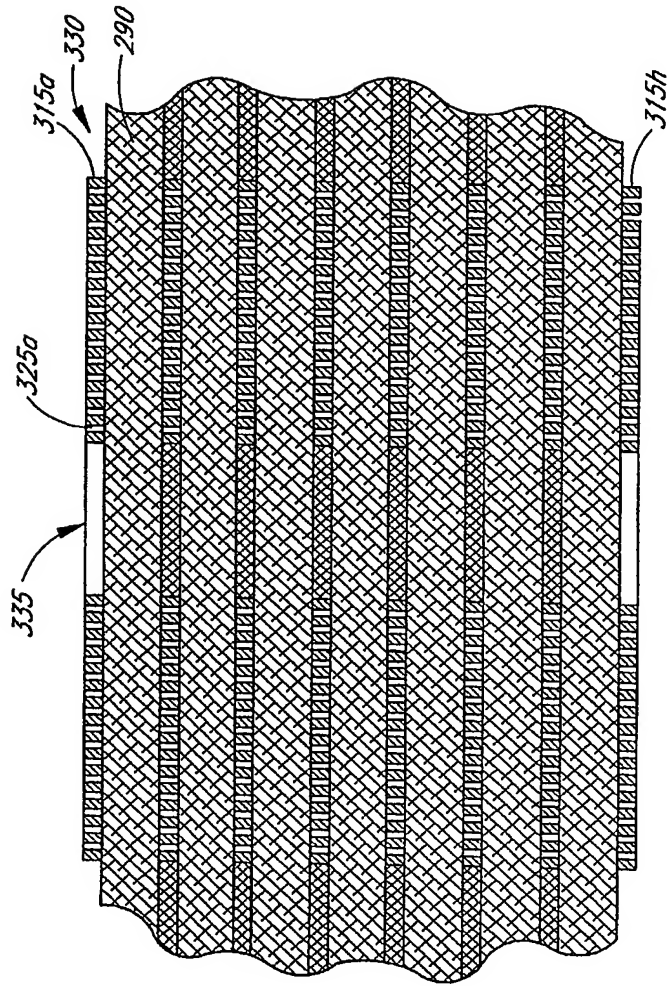
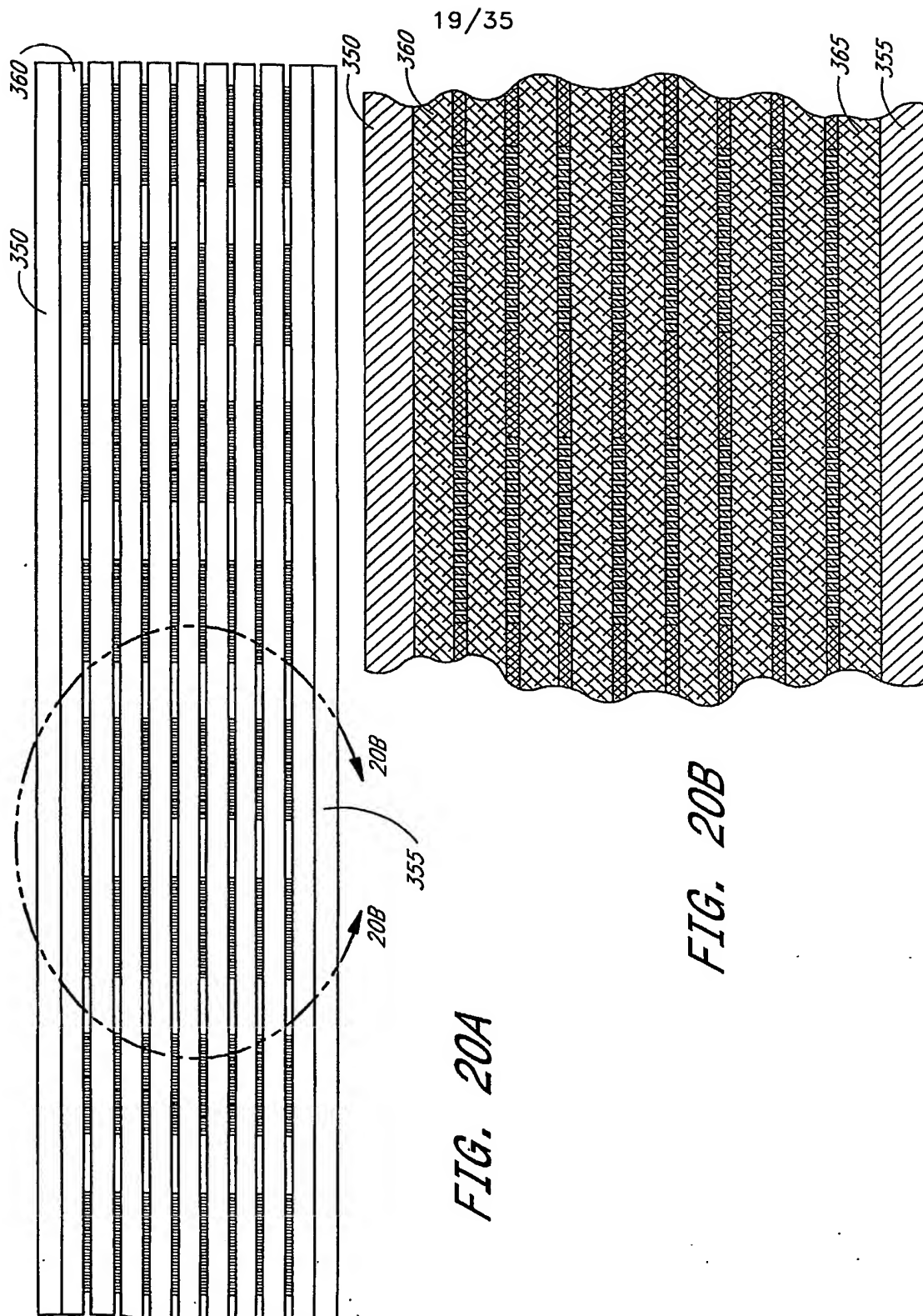


FIG. 19B

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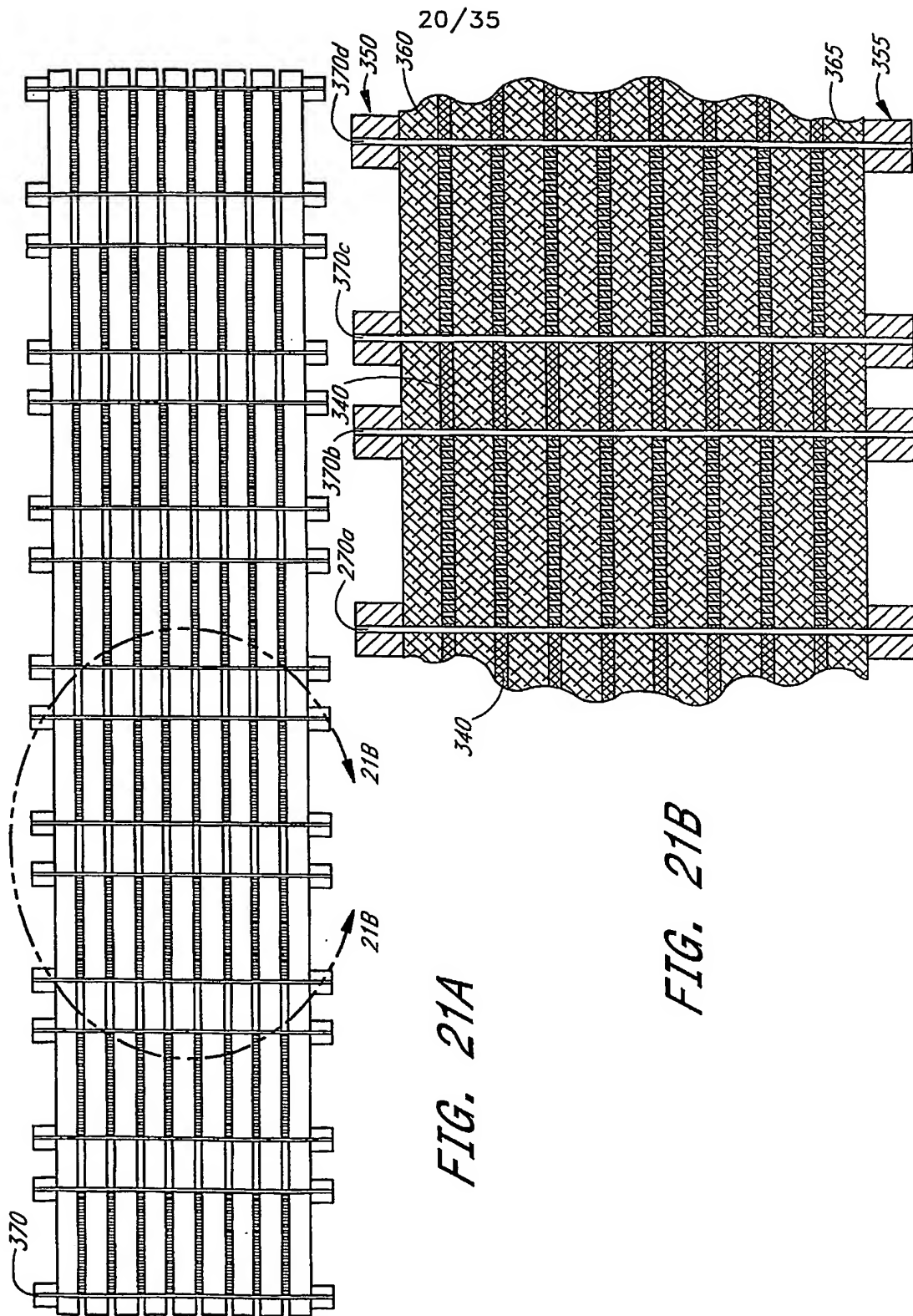
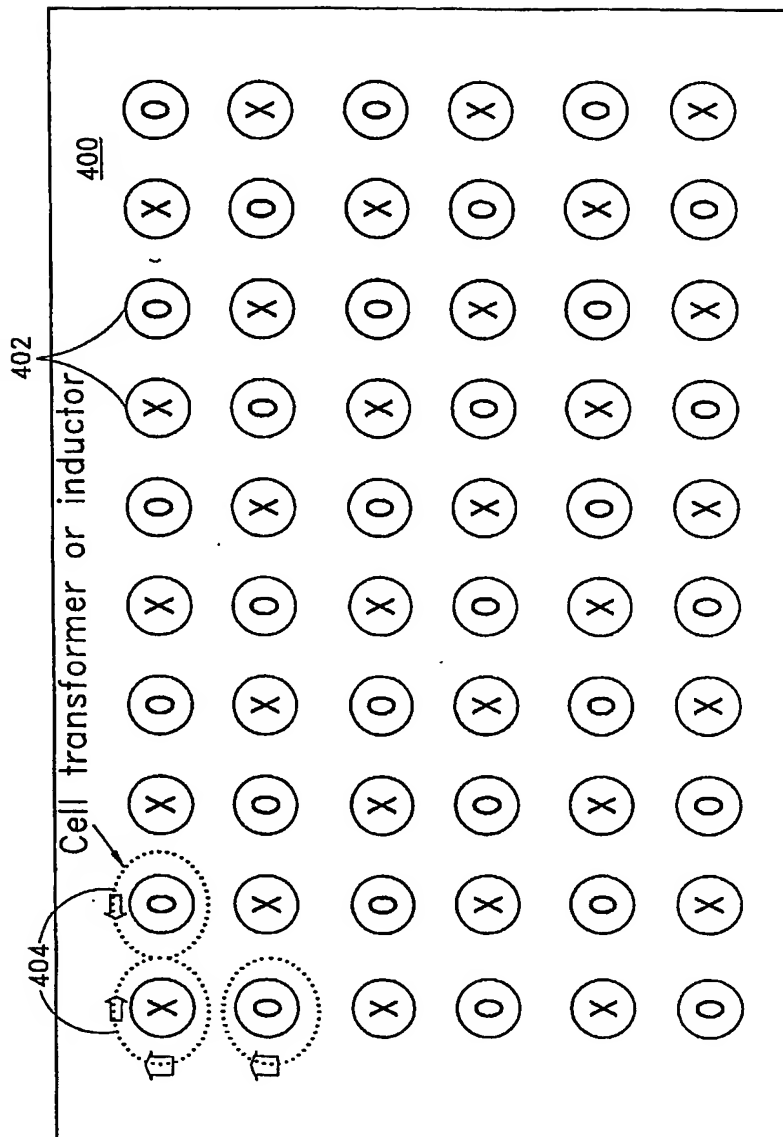


FIG. 21A

FIG. 21B

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60 cell cores in same ferromagnetic slab energized by 1 current carrying conductor



(X) Via with current into hole (O) Via with current out of hole

FIG. 22

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Magnetic Flux from a Single Conductor

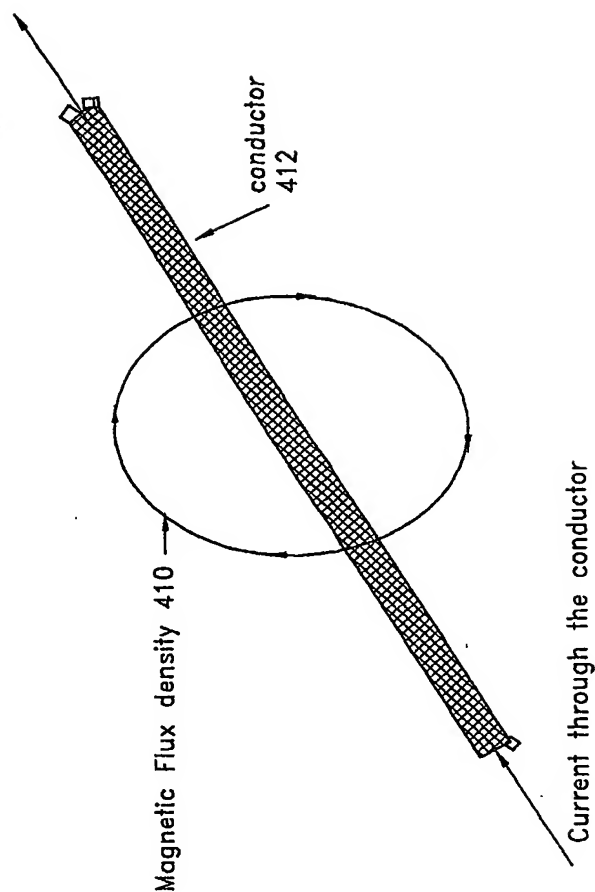


FIG. 23

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Electric Field Intensity from an Enclosed area of Changing Magnetic Flux

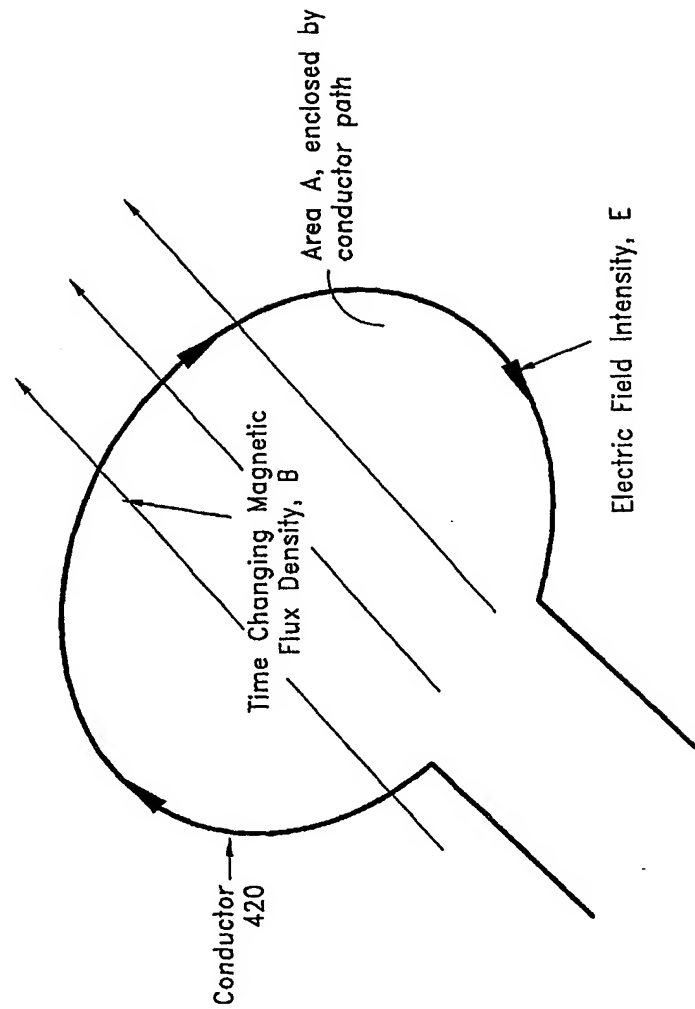
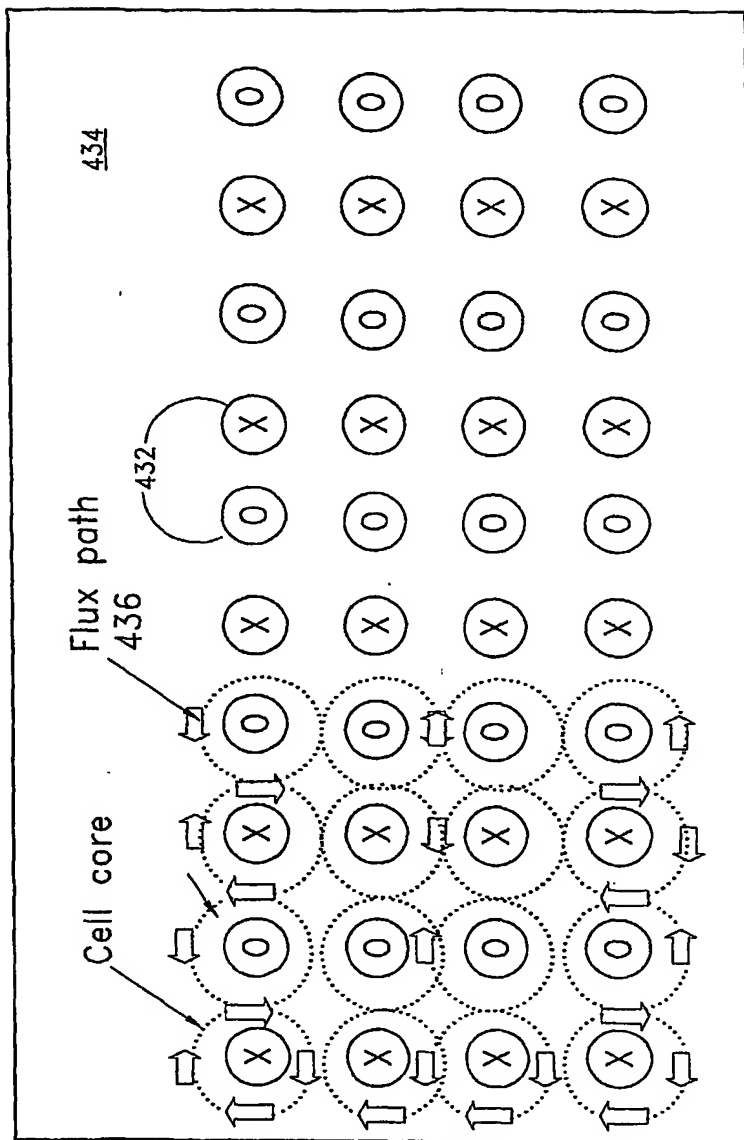


FIG. 24

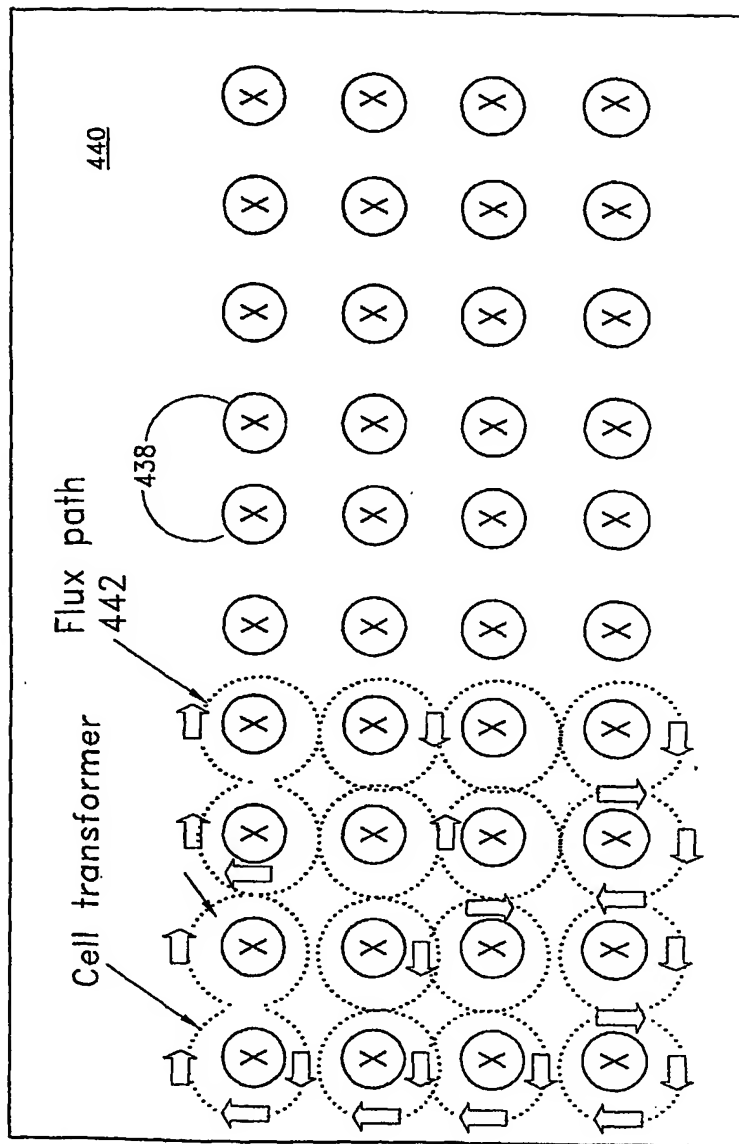
40 cell cores in same ferromagnetic slab
with each energized by 1 current carrying conductor



⊗ Via with current into hole
⊙ Via with current out of hole

FIG. 25

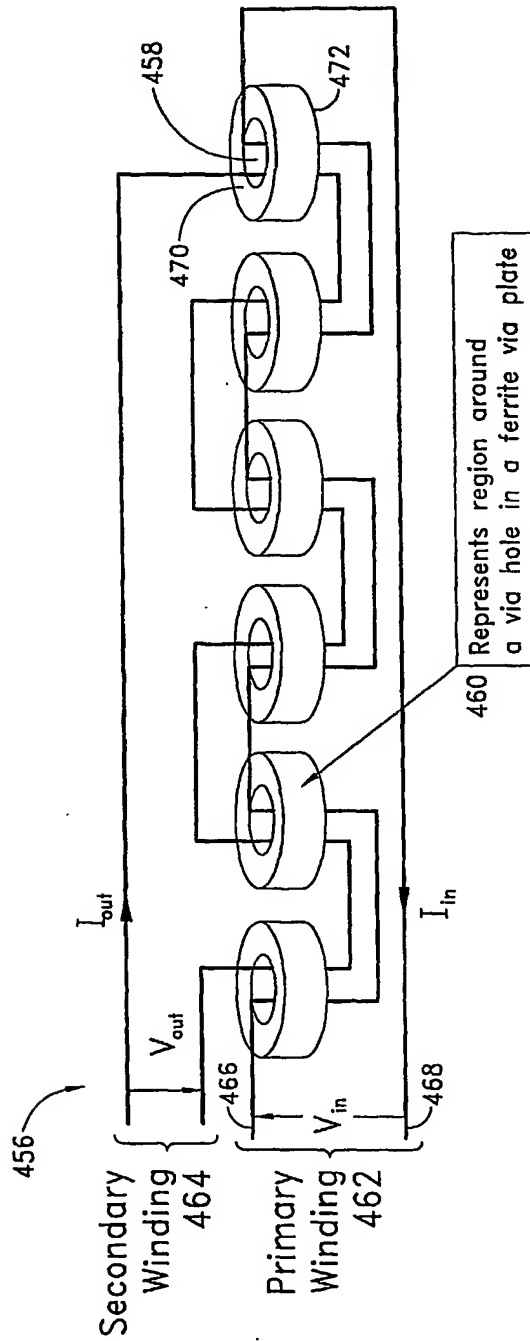
40 cell cores in same ferromagnetic slab
with each energized by 1 current carrying conductor



⊗ Via with current out of hole
⊙ Via with current into hole

FIG. 26

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6 Cell Transformer
turns ratio=1 to 1
(primary to secondary)

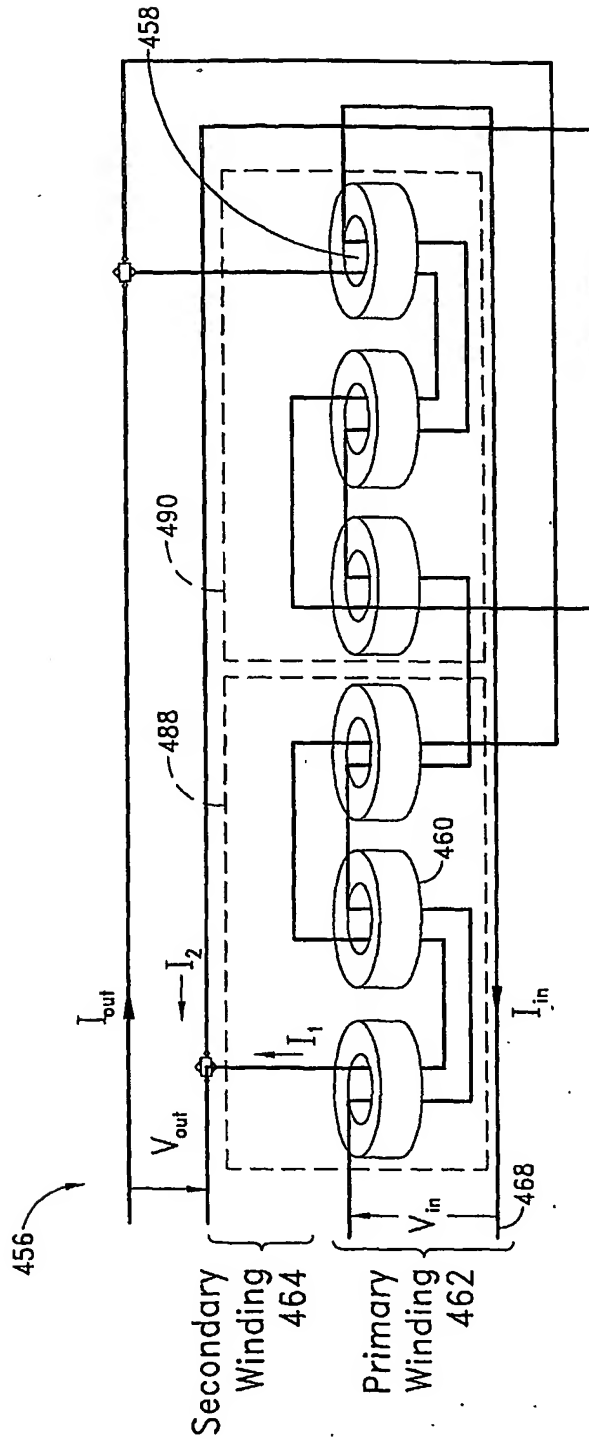
$$V_{in} = V_{out}$$

$$I_{in} = I_{out}$$

Max current in Cell= I_{out}

FIG. 27

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6 Cell Transformer
turns ratio=2 to 1
(primary to secondary)

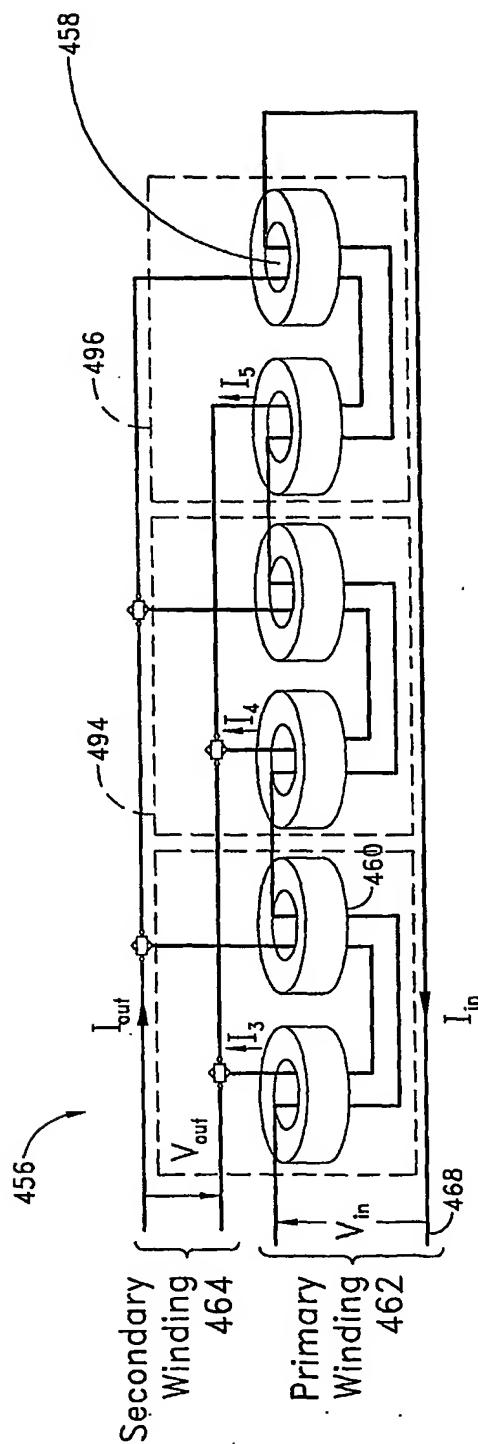
$$V_{in} = 2 * V_{out}$$

$$I_{in} = 1/2 * I_{out}$$

Max current in Cell=1/2*I_{out}

FIG. 28

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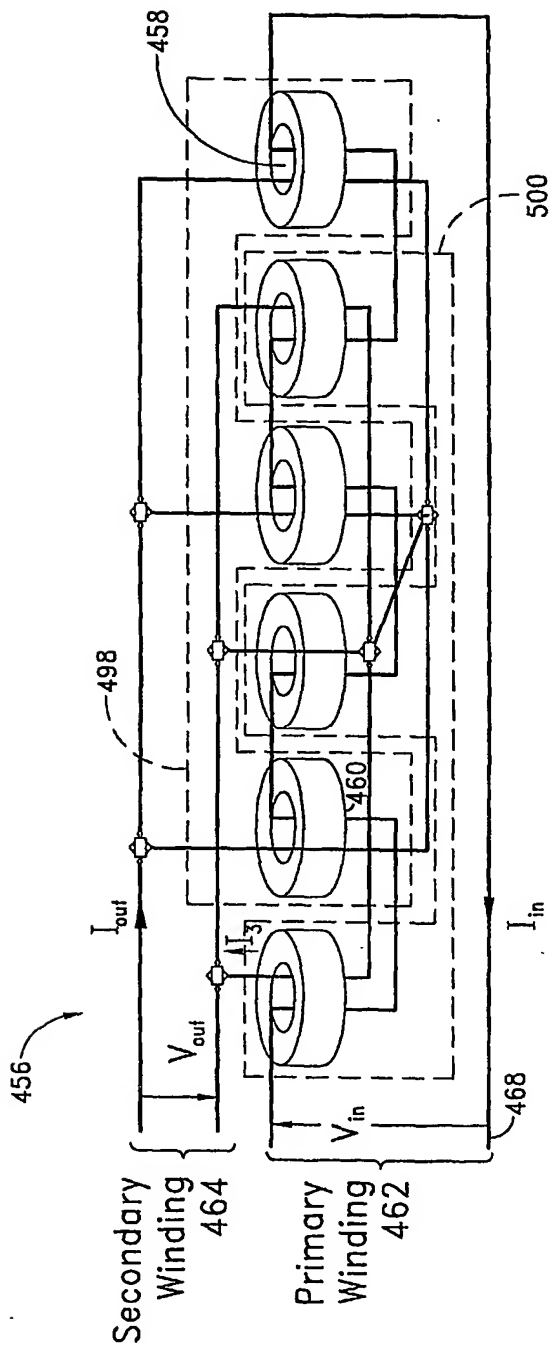
6 Cell Transformer
turns ratio=2 to 1
(primary to secondary)

$$V_{in} = 3 * V_{out}$$

$$I_{in} = 1/3 * I_{out}$$

Max current in Cell = $1/3 * I_{out}$

FIG. 29



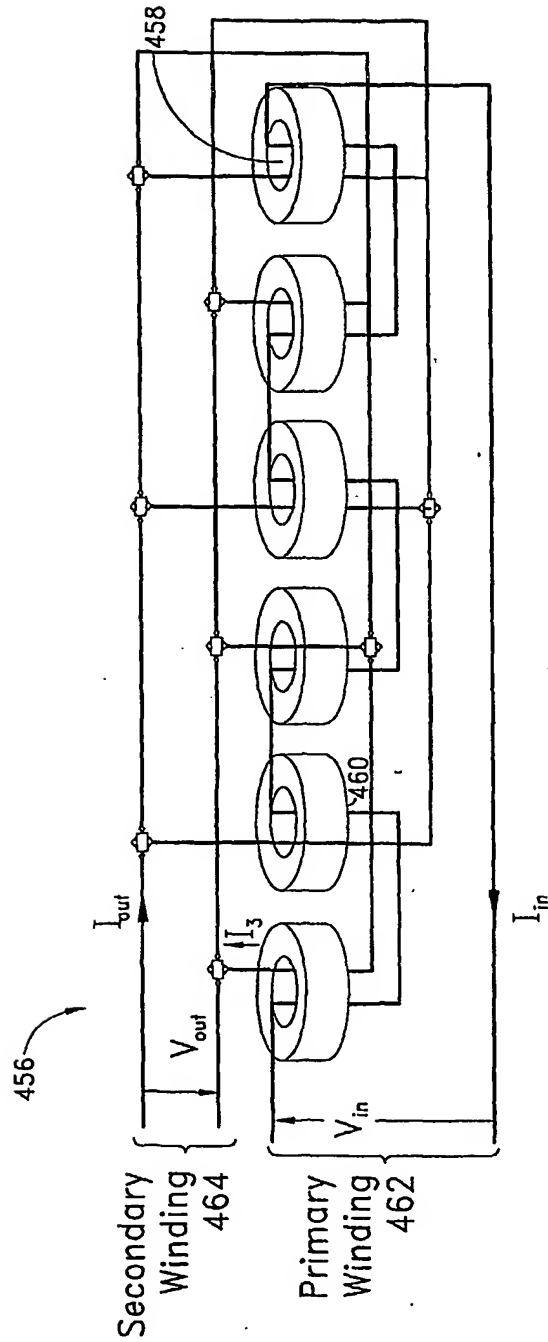
6 Cell Transformer
turns ratio=2 to 1
(primary to secondary)

$$V_{in} = 3 * V_{out}$$
$$I_{in} = 1/3 * I_{out}$$

Max current in Cell=1/3*I_{out}

FIG. 30

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6 Cell Transformer
turns ratio=6 to 1
(primary to secondary)

$$V_{in} = 6 * V_{out}$$

$$I_{in} = 1/6 * I_{out}$$

Max current in Cell = $1/6 * I_{out}$

FIG. 31

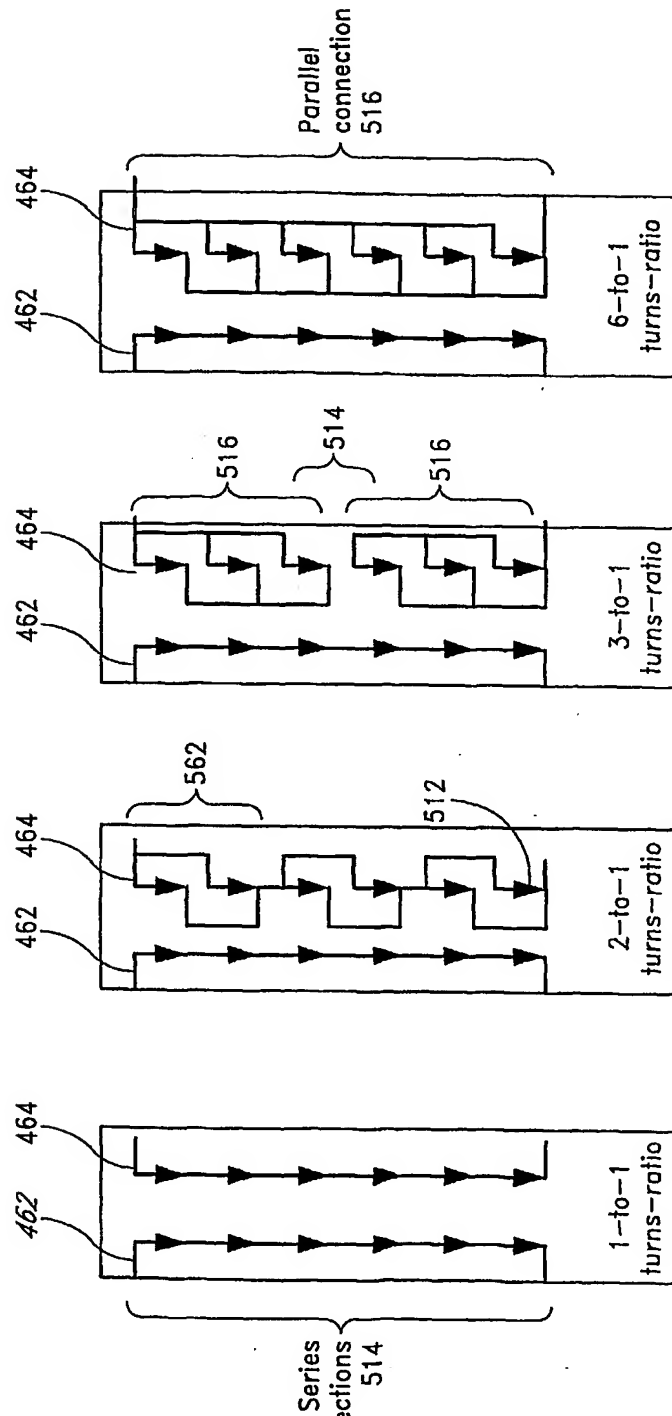


FIG. 32A FIG. 32B FIG. 32C FIG. 32D

Symbolic Representation of 6 Cell
Transformer Connections

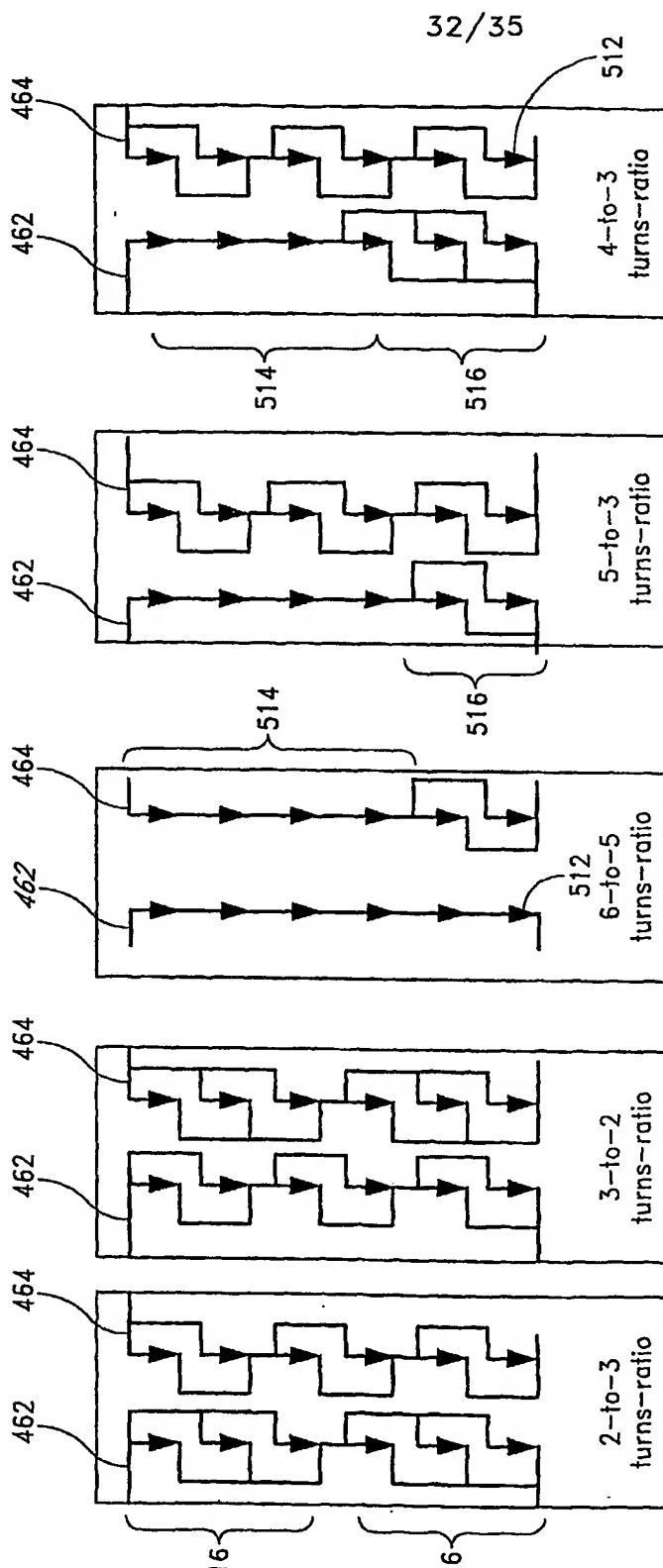


FIG. 32I

FIG. 32H

FIG. 32G

FIG. 32F

FIG. 32E

Additional Symbolic Representation of 6 Cell Transformer Connections

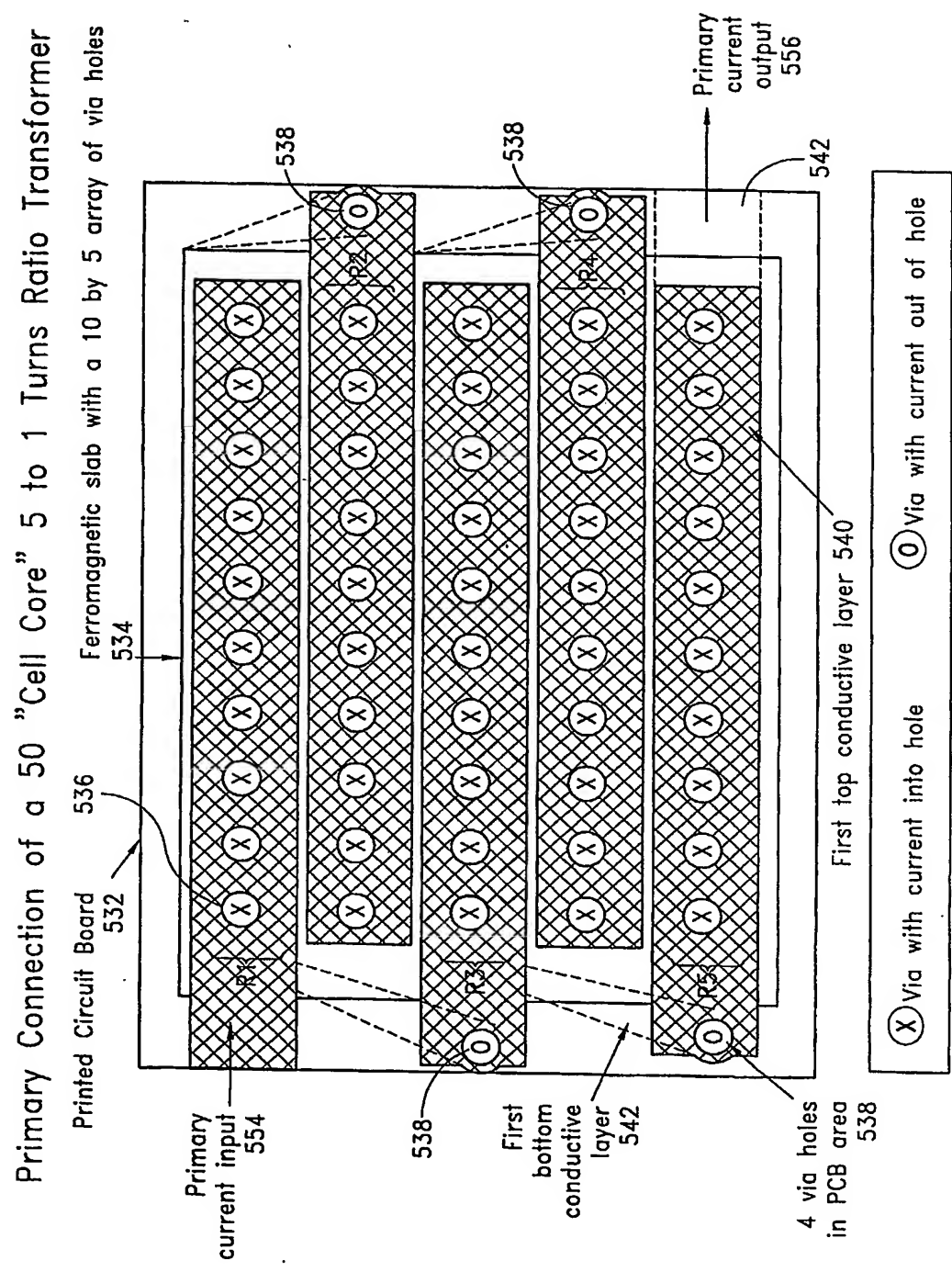


FIG. 33A

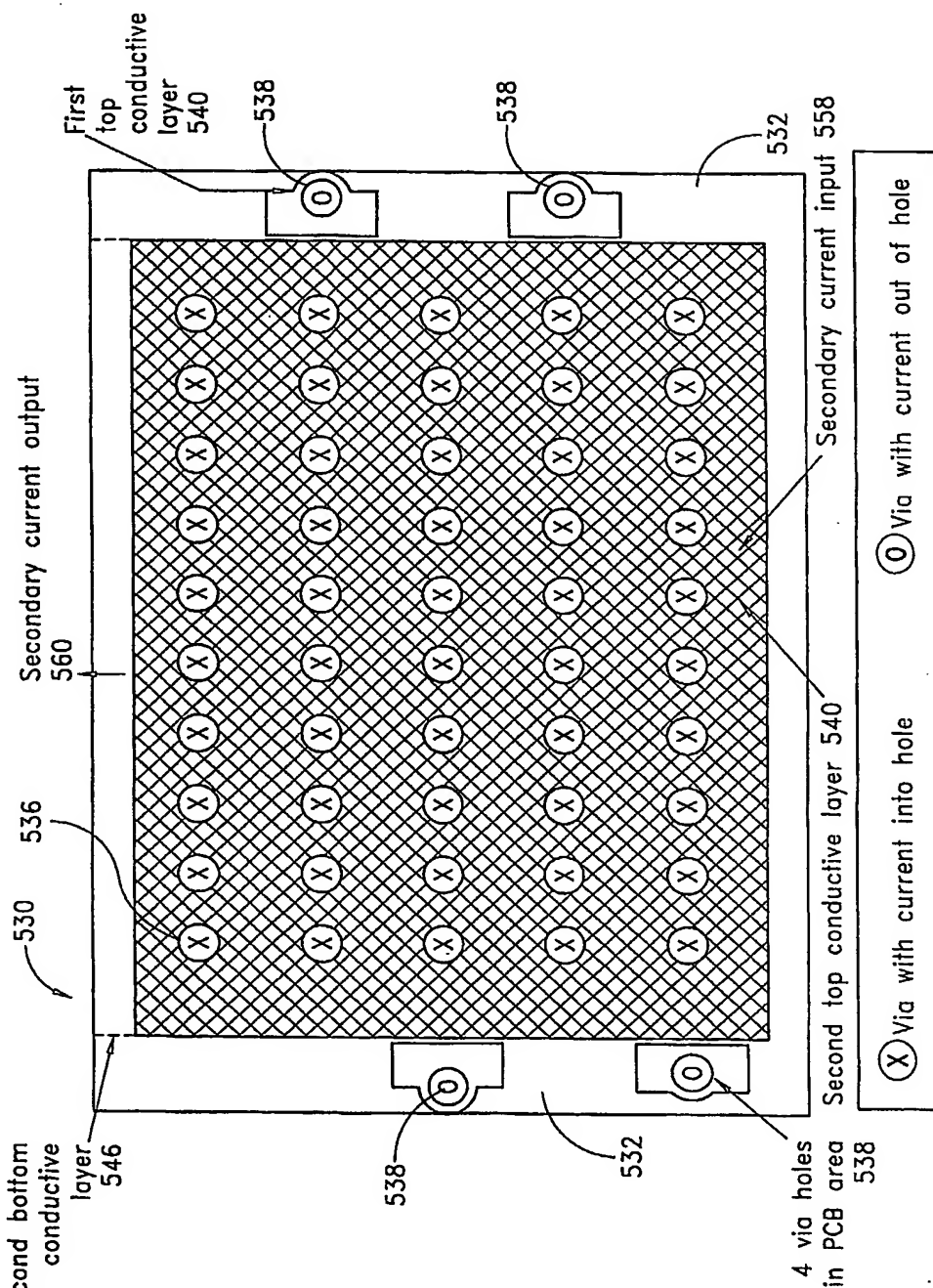


FIG. 33B

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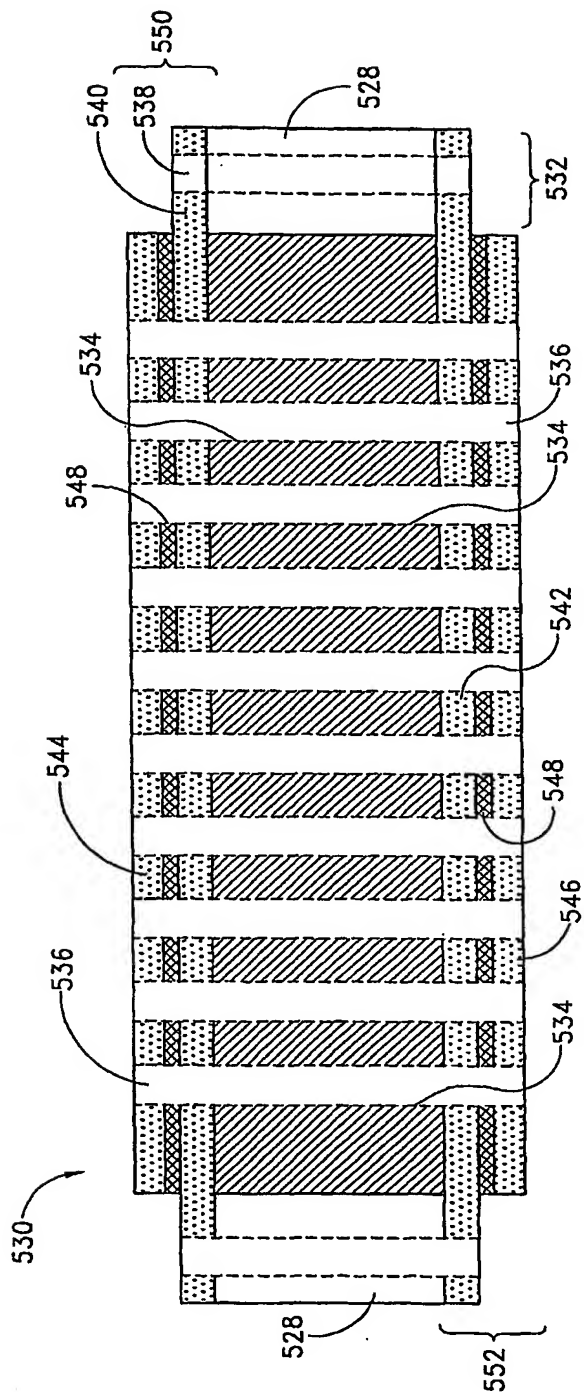


FIG. 33C

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